Teaching Nutrition through Math, Science, Language Arts, and Health Enhancement

Eat Smart Be Smart

Make Calcium Count For You

- **Grade Level:** Fourth **Lesson Time:** 50 Minutes
- **Integrated Core Subjects:** Science and Health Enhancement
- **Montana Content Standard:** Science Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate results and reasonable conclusions to scientific investigations.
- **Montana Content Standard:** Health Enhancement 1: Students have a basic knowledge and understanding of concepts that promote comprehensive health.
- **Objectives:** Students will understand the function of calcium in maintaining good bone health; observe and compare the difference between two bones; one being calcium depleted; learn how much calcium they need and calcium rich food sources; and identify the calcium content in a product using the label.

Lesson/Activity

1. Review some fun facts about bones using the Bone up on Basics work sheet. Distribute the seven slips of paper with the questions and answers to seven different students. Have each student stand and read the question to the class. Ask for students to stand if they think the statement is true and stay seated if they think it is false. Discuss the answer and then ask the student to read the answer. Continue until all seven questions are answered.
2. Review that their bones are growing every day and growing bones need key nutrients and physical activity to be strong and healthy. Ask the students if they can name a nutrient their bones need? Answers may include calcium or vitamin D. Calcium is a mineral—refer to the Nifty Nutrients handout for additional information.
3. Ask students if they can name any calcium-rich foods (milk, yogurt, cheese, pudding, ice cream, cottage cheese, calcium fortified orange juice). If some students have allergies or intolerances to milk, you may want to review that children who cannot consume dairy products may choose other calcium-rich products like soy-based food, fortified products (like orange juice) or take a calcium supplement.
4. Ask students if they know how many servings of dairy they need in a day. The recommendation is at least three servings but preferably four servings per day. Ask the students if they remember what a serving is from the dairy group. A serving is a cup of milk/yogurt or 1 1/2 ounces of cheese, and they need 3-4 servings per day. Students may have seen the 3-A-Day slogan on dairy foods. This is a national campaign to encourage everyone to drink more dairy. The Web site is www.3aday.org. Ask students what they typically drink at meals and snack time. Are they getting three servings of dairy foods a day?
5. Ask students if they know what kind of milk is the best to drink for keeping their heart healthy. Answer: skim/fat-free or 1% because they have the same amount of calcium as other milks but the fat content is low (1%, 3 grams per cup) or zero (skim). Show the milk carton to help children visualize a 1 cup serving.

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Materials Needed

- Experiment materials (two chicken bones, vinegar, two containers, one with a lid)
- One copy of the Rubber Bones Experiment and Bone Up On Basics: True or False Sheet (Cut apart the questions and the corresponding answers into seven slips of paper)
- 1 cup or a 1/2 pint milk carton from the school lunch program and Nutrition Fact Labels from a soft drink, juice drink, calcium fortified orange juice, yogurt, and energy drink
- A copy of Make Calcium Count for You and Take a Stand work sheets for each student
- Teacher reference material: from Grade 3 Lesson; Nifty Nutrients handout

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6. Ask a student to review the Nutrition Facts label on the carton and read the amount of fat in the milk. Five grams of fat equals one teaspoon of fat. How many teaspoons of fat is in the milk carton? Fat-free/skim and 1% milk have less than one teaspoon of fat in the 1 cup serving. Either source of milk is recommended for healthy children over two years of age.
7. Project the Take a Stand handout on the board and distribute a copy to each student. Point out that the Nutrition Facts section lists the serving size and Percent Daily Value (%DV) . The %DV indicates if a food is high or low in a nutrient and how much one serving contributes to your total daily requirement. Twenty percent or more is high; five percent or less is low. Ask students the following questions: what is the serving size? (1 cup); what is the total fat? (0g); what type of milk is it? (fat free/skim); what percent of calcium does it provide? (30% or approx. 300 mg); and is this a good source of calcium? (yes)
8. Encourage the students to read the Nutrition Facts label on foods and drinks to determine the amount of calcium. Compare the amount of calcium found in different items, such as a soft drink, fruit drink, calcium fortified orange juice, yogurt, or energy drink.
9. Distribute the Make Calcium Count For You work sheet and ask students to complete questions 1 and 2.
10. Introduce the Rubber Bones experiment and prepare the two containers as the directions indicate. Ask the children to predict what will happen to the bone soaking in the vinegar and list their prediction and reason for it by answering questions 3 and 4 on the work sheet.
11. After a week, using the discussion section on "Rubber Bones" handout as reference material, list the students' predictions and reasons for them on the board. What actually happened to the bones appearance and texture? What happened to the bone in the jar without a lid on it? Were any of the students correct? Discuss what happened to the bone that was placed in the vinegar and how a similar thing can happen over time in their own bodies if don't have adequate calcium in their diet.
12. Encourage the children to enjoy 3-4 calcium rich foods each day to build and maintain strong bones.

Outcome Goals

- Students will know the importance of calcium for good bone health, how much they need, and how to meet their daily requirement for developing strong bones.
- Students will be able to determine if a food product is a good source of calcium by reading the food label.
- Students will plan how to get three to four servings of dairy foods per day.
- Students will observe and compare what happens when bones do not get enough calcium.

Extending the Lesson

- Physical activity, especially weight bearing exercises like basketball, running, tennis, also is important to helping children build strong bones. Ask students to tally their weekly physical activity by recording their activities for a week in minutes. Prior to distributing the Weekly Activity Tally work sheet, review the different kinds of activities such as aerobic activities, games and sports, and work or other play activities. After the children record their total physical activity amounts for the week, they should determine an average daily amount and compare this level to the recommendation. The recommended amount of physical activity for children is at least one hour, or 60 minutes per day. This lesson allows students to practice math skills—addition and division.

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